

## Summary

On February 4, 2003, at 11:10 AM, a worker was fatally injured by the explosion of a cast iron cylindrical object (nozzle needle) in the machine shop.

The victim had worked for this company for approximately nine weeks prior to the incident. His job title with the company was "Welder" (There are 2 other welders employed by this company). The victim was well experienced and was said to be a "very accomplished and professional welder" with several years of experience.

The company involved in this incident manufactures and repairs hydroelectric turbines and does welding and fabrication of other metal parts. The victim had been applying heat to the nozzle needle in preparation to resurface the object with a bronze coating. According to the employer, he was using a "brazing" method to resurface the nozzle needle with bronze in a process called buildup.

The nozzle needle was, at the time of the incident, attached to a long steel shaft by means of a threaded 4-inch piece. The shaft was held in the chuck of a Lathe that was being used as a vice. According to eyewitnesses, the victim had been applying heat to the object for about 15 minutes by means of an Acetylene/Oxygen torch equipped with a "rose bud" nozzle.

The employee was not aware that the object being heated contained a hollow cavity and that it was not vented properly. The heat from the torch caused the trapped gases inside the nozzle needle to expand creating high-pressure explosion killing the worker.

## Recommendations

- The employer must ensure the development of an effective job hazard analysis, regarding the brazing/welding process before work is performed.
- WAC 296-24-69009 Hazards and precautions. A job hazard analysis shall be made, by qualified personnel, of the operations to be performed on each welding machine to determine the safeguards and personal protective equipment that shall be used for each job.
- The employer must develop a training program to ensure the competency of all company welders in the field of occupational safety. This training program must be supervised in a manner that ensures the workers know how to work safely.

WAC 296-800-14020 Develop, supervise, implement, and enforce safety and health training programs that are effective in practice

- The Employer must ensure that any object with a hollow cavity is adequately vented to permit the escape of gases.

WAC 296-24-69505(2) Venting and purging. All hollow spaces, cavities or containers shall be vented to permit the escape of air or gases before preheating, cutting or welding. Purging with inert gas is recommended.